Family Thunnidae

Body plump, elongated or fusiform. Caudal peduncle slender. Head elongate, flattened or not above. Snout moderate, rather long. Eyes usually small, with only marginal adipose lids, little invading iris. Mouth ~~nearly moderate or small. reaches or extends beyond eye.~~ maxillary reaches below eye. Teeth uniserial in jaws, small or moderate, conic or compressed; usually present on palate and tongue. Body usually scaly. Corselet small or large and conspicuous. Lateral line undulate, with keel along side of caudal peduncle, also little inclined keel at base of each caudal lobe and slightly approximated posteriorly. Fins ~~small~~ large, sometimes elongated. Gill rakers fine, numerous, lower 15 to 39.

Analysis of Genera

a.' Thunninae. Body wholly scaly; vertebrae 39, of which 21 caudal.

b.' Second dorsal and anal not longer than first dorsal.

c.' Pectoral shorter, not reaching vertical of second dorsal origin; markings on belly transverse, constantly present. Thunnus.

c.² Pectoral very long, reaches second dorsal fillet; markings on belly longitudinal reticulations. Germo.

b.² Second dorsal and anal longer than first dorsal.

d.' Lower gill rakers 15 to 18.

e.' Pectoral passes second dorsal origin, long as head. Parathunnus.

e.² Pectoral not reaching second dorsal, less than head. Kishinoella.

d.² Lower gill rakers 21. Neothunnus.

a.² Luxinae. Body naked outside corselet; vertebrae 39, of which 19 caudal; second dorsal and anal low.

f.¹ First dorsal continuous to second.

g.¹ Lower gill rakers 22 to 28.

Euthynnus.

g.² Lower gill rakers 41.

Katsuwonus.

f.² Interdorsal very long, first and second dorsal widely separated; lower gill rakers 30 to 36.

Auxis.

Genus Thunnus South

Thunnus South, Encyclop. metropol., vol. 5, (1845) p. 620, (Type Scomber thynnus Linnaeus, tautotypic.)

Thynnus (not Fabricius 1775 in hymenoptera) Cuvier, Règne Animal, vol. 2, (1817) p. 313, (Type Scomber thynnus Linnaeus, tautotypic.)

Orycnus Gill, Proc. Acad. Nat. Sci. Philadelphia, vol. 14, (1862) p. 238, (Type Scomber thynnus Linnaeus. (Error.))

Albacora Jordan, Proc. Acad. Nat. Sci. Philadelphia, (1888) p. 180, (Type S. comber thynnus Linnaeus, orthotypic.)

Body oblong, fusiform, plump, broad, tail sharply tapering. Caudal peduncle slender, broadly depressed, with strong keel each side. Head moderate, conic. Snout conic. Eye moderate, smaller with age, well advanced, high, in front half of head, set in marginal adipose lids. Mouth short, wide. Maxillary reaches below eye, with oblique groove down at lower hind edge. Teeth small, conic, uniserial in jaws, and bands of minute teeth on vomer and palatines. Lower gill rakers 24 to 30. Vertebrae 18+21. Scales very small on trunk and tail, 230 in lateral line, form small corselet above pectoral. First dorsal with 13 to 15 spines, graduated shorter than

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biauritus, 365.

bleekeri, 395.

(Pseudosciaena) bleekeri, 395.

borneensis, 379.

brevidorsalis, 352.

capensis, 400, 408, 410.

carutta, 384.

chuan-chua, 362.

ciliata, 305.

cinerascens, 203, 211.

cirrhosa, 409.

cirrosa, 407.

coibor, 378.

coitor, 405.

crocea, 369.

cuja, 390.

diacanthus, 374.

distincta, 372.

dubia, 407, 408, 414.

dussumieri, 408, 412, 413, 414.

fauvelii, 404.

glacus, 398.

glauca, 398.

glaucus, 398.

goldmanni, 387.

goma, 374.

grandoculis, 134.

harak, 21.

first, interdorsal very short. Second dorsal and anal small, low, usually much lower than first dorsal and followed by 7 to 9 finlets. Caudal small, forked. Pectoral short, tapers gradually to point, fin not reaching second dorsal. Ventral short. Markings on belly transverse whitish bars and spots alternating.

These among the largest of bony fishes are only exceeded by the great marlins. Tunnies have been known to weigh 375 kg., the average size of about half that weight. They are easily distinguished by the small eye, short pectoral, sharply bent lateral line, triangular air bladder, transverse white bars and rows of spots on the belly

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Underscored figs. close 22 25

schlegelii, Emmelichthys, 348.

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Erythrocles, 349.

Sciaena (Pseudosciaena), 395.

Sparus (Chrysophrys), 163.

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albida, 378.

albiflora, 385.

(Corvina) albiflora, 385.

amblyceps, 369.

amoyensis, 371.

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antarctica, 400.

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axillaris, 397.

belangeri, 382.

(Corvina) belangeri, 382.

belangerii, 382.

belengeri, 382.

and yellowish fillets without dark edges. The flesh is dark reddish, rather firm and not very oily. Food usually sardines, anchovies, flying fish, mead, and eels, squids, pteropods and pelagic crustacea. Tunnies are migratory, following the presence or absence of food.

Kishinouye says:

"Tunnies are devoured by killer-whales which are said to catch them at the nape and kill them immediately, so that they fear killers so greatly that they are frightened away several miles from the spot where these ferocious enemies are found. Thus catches made by pound nets vary greatly according to the favorable or unfavorable proximity of killers. Sometimes tunnies leap on beaches

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Underscored figs. case 12

sargus, Diplodus, 175.
Sparus, 175.
sarissophorus, Crenidens, 199, 200.
Girella, 200.
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Scatharus graecus, 183.
schlegeli, Chrysophrys, 163.
Corvina, 396.
Corvula, 395.
Emmelichthys, 348.
Erythrichthys, 348, 349.
Erythrocles, 348, 349.
Nibea, 395.
Pseudosciaena, 395.
Sciaena, 395.
Sciaena (Argyrosoma), 395.
Sciaena (Pseudosciaena), 395.
Sparus, 156,163 395.

recklessly to escape from these enemies!"

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sapidissimus, Centropristes (Mulloides), 434.

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cervinus, 177.

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rondeletii var. capensis, 176.

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Thunnus thynnus (Linnaeus

Scomber thynnus Linnaeus, Syst. Nat., ed. 10, pt. 1, 1758, f. 297, (type locality, pelagic between tropics. (on Scomber pinnulus etc. Artedi, Ichth., 1738, 2 f. 31, no locality [= Europe]; ed. 12, pt. 1, f. 493, 1766. — Forskål, descript. Animal., p. 16, 1775 (Red Sea), p. 19 (Malta). — Bonnaterre, Tabl. Ichth., p. 139, pl. 58, fig. 229, 1788 (between tropics). — Gmelin, Syst. Nat. Linn., pt. I, p. 1330, 1788 (European, African, Asiatic and American seas). — Walbaum, Artedi Pisc., vol. 3, p. 210, 1792 (copied). — Forster, Fauna Indica, p. 16, 1795. — Blumenbach, Handb.

Naturges., p. 279, 1799. — Lacépède, Hist. Nat. Poiss., vol. 2, pp. 598, 605, 1800 (oceans of Asia, Africa, America, Mediterranean). — Schneider, Syst. Ichth. Bloch, p. 21, 1801 (copied).

The Fishes of the Families Cheilodipteridae, Chandidae, Kuhliidae and Serranidae, obtained by the United States Steamer Albatross in 1907 to 1910, chiefly in the Philippine Islands and adjacent seas.

By Henry W. Fowler,
of the Academy of Natural Sciences
of Philadelphia
and
Barton A. Bean,
of the United States National Museum.

Thynnus thynnus Gunther, Cat. Fish. Brit. Mus., vol. 2, p. 362, 1860 (Weymouth; Plymouth). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokio, vol. 33, p. 121, 1913 (reference). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 50, November 4, 1931 (reference).

Apogonichthys hyalinus (Smith and Radcliffe)

Amia hyalina Smith and Radcliffe, Proc. U. S. Natl. Mus., vol. 41, 1912, p. 433, pl. 36, fig. 3. Talisse Island, north of Celebes.

Thunnus thynnus Jguka and Matsuura, Cat. Zool. & Pec. Tokyo Mus., Vert., p. 161, 1920 (Tokyo). — Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 7, p. 376, 1923 (Honolulu). — Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 10, Sep. 30, 1926 (compiled). — Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 798, Oct. 1927 (Table Bay; Hout Bay). — Fowler, Mem. Bishop Mus., vol. 10, p. 133, 1928 (Honolulu; Society Islands); Proc. Acad. Nat. Sci. Philadelphia, vol. 86, p. 356, fig. 6 (head) and 7 (dentition), Aug. 2, 1934 (Nova Scotia).

(Proc. U. S. Nat. Mus., vol. 80, art. 6, p. 9, 1932 (Ubi and Ua Huka, Marquesas).

Orcynus thynnus Lütken, Vid. Selsk. Skrift. Kjöbenhavn, ser. 5, vol. 12, no. 6, p. 460, 1880.

Thynnus vulgaris Cuvier, Hist. Nat. Poiss., vol. 8, p. 58, pl. 210, 1831 (Sardinia, Constantinople, Black Sea, Trebizond, Spain, Italy, Marseilles, Adriatic, British Isles, Portugal, Baltic). — Guichenot, Notes Ile Réunion, vol. 2, p. 26, 1862.

of basal elements; circuli fine.

D. VIII, I, 9, I, third spine 1 2/3 to 1 4/5 in total head length, first ray 1 3/5 to 2 1/8; A. II, 8, I, second spine 3 1/8 to 3 1/3, second ray 1 7/8 to 2; caudal 1 2/5 to 1 1/2, rounded; least depth of caudal peduncle 2 2/5 to 2 2/3; pectoral 1 3/4 to 1 4/5; ventral 1 3/4 to 1 4/5.

Uniformly brown, in life with 5 dark vertical bands, each narrower than pale interspaces, less distinct with age. Iris pale. Fins all paler. Apices dorsal and ventral dusky.

Philippines, Formosa, Hawaii. The above description from a series of Hawaiian examples in the Academy of Natural Sciences of Philadelphia.

1 example. Kamaran and Pi Island, Borneo. September 7, 1909. Length 55 mm.

Thynnus orientalis Schlegel, Fauna Japonica, Poiss., pts. 5-6, (1844) p. 94, pl. (type locality, seas of Japan).

— Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 367, (reference). — Lütken, Vidensk. Selsk. Skrift. Kjöbenhavn, ser. 5, vol. 12, no. 6, (1886) p. 464, (—Martens, Preuss. Exped. Ost Asien, vol. 1, p. 390, 1876 (Nagasaki). Thynnus orientalis Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, (Dec. 1922) p. 32, (Honolulu). — Kishinouye, Journ. College Sci. Agric., vol. 8, no. 3, (March 1923) p. 437, figs. 3, 21, 43, 44, 50, (northern Honde, Chosen, Sendai). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, June 27, 1925, p. 216, (Kobe, Misaki). — Jordan and Evermann, Bull. Bur. Fish., vol. 12, Sep. 30, 1926, p. 214, (compiled). — Anonymous, Ill. Jap. Aquat. Animals, vol. 1, pl. 25, fig. 1, 1931.

Thynnus tonggol Bleeker, Nat. Tijds. Ned. Indie, vol. 1, (1850) p. (355) 356, (type locality, Batavia; Verh. Batavia. Genoot. (Makreel.), vol. 24, (1852) p. 89 (Batavia); Verslag. Akad. Wet. Amsterdam, vol. 12, (1861) p. 36 (Singapore). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 364, 1860, (reference).

Neothunnus tonggol Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, Sep. 30, (1926) p. 22, (reference).

Thynnus maccoyii Castelnau, Proc. Zool. Soc. Victoria, vol. 1, (1872) p. 104, (type locality, Melbourne market).

Thunnus maccoyii Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, (Sep. 30, 1926) p. 13, (compiled)

Thunnus (Thunnus) maccoyii Inc Cullock, Mem. Austral. Mus., vol. 5, pt. 2, (Sep. 10, 1929) p. 263, (reference).

Orcynus schlegelii (Steindachner) Steindachner and Döderlein, Denks. Kaiserl. Akad. Wiss. Wien, Math.-naturw. Kl., vol. 49, pt. 1, p. 178, pl. 3, fig. 1, 1885 (type locality, Tokyo).

Thunnus schlegeli Jordan and Snyder, Annot. Zool. Japan, vol. 3, p. 64, 1901 (Yokohama). — Fujita, Otaki, Higurashi, Fishes of Japan, vol. 1, p. 21, pl., 1905.

Thunnus saliens Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 10, pl. 1, pl. 2, figs. 1-3, Sep. 30, 1926 (type locality, Off Catalina, California).

Thunnus philippii Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 13, pl. 2, fig. 4, Sep. 30, 1926 (type locality, Bay of Islands, New Zealand (based on a photograph!).

Depth 3 3/4 to 4 1/4; head 3 1/4 to 4, width 1 3/4 to 1 4/5. Snout 2 4/5 to 3 3/4 in head; eye 6 4/5 to 8 1/4, 1 3/5 to 3 in snout, marginal adipose borders rather thick; maxillary reaches .5 to 3/5 in eye, expansion 2 in eye, length 2 3/5 to 2 3/4 in head; teeth simple, conic, small, uniserial in jaws, minute ones on vomer and palatines; interorbital 3 to 3 4/5, wide, convex. Gill rakers 10 or 11 + 27 to 30, nearly equals eye.

Caudal peduncle above pectoral base, with scales little large above pectoral fin.

D. XIII to XV — I or II, 12 to 14 + 8 to 10, first spine 2 2/5 to 2 1/2 in head, first branched ray 1 4/5 to 3 1/2; A. II or III, 11 or 12 + 7 to 9, first branched ray 1 3/4 to 4 1/4; caudal 1 2/5 to 1 1/2, deeply lunate; pectoral

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drewi, Pimelepterus, 205.

dubia, Sciaena, 407, 408, 414.

dubius, Mullus, 315.

Upeneoides, 328.

Upeneus, 315, 328.

Dulosparus, 148, 168.

durbanensis, Sargus, 153.

Sparus, 147, 153.

dussumieri, Corvina, 398.

Johnius, 373, 398,

Pimelepterus, 212.

Sciaena, 408, 412, 413, 414.

Seiaena, 413.

Umbrina, 412.

dux, Pentapodus, 71, 83.

Pentapus, 83.

edentulus, Sparus, 250.

edita, Argyrops, 144.

Evynnis, 144.

Parargyrops, 143, 144.

ehrenbergii, Lethrinus, 48, 49.

elegans, Kyphosus, 207.

Pimelepterus, 207.

elevata, Girella, 187, 190.

elevatus, Girellipiscis, 190.

elongatus, Lethrinus, 23.

emarginata, Spondyliosoma, 182, 183.

emarginatus, Cantharus, 183.

Caranthus, 183.

1½ to 2 in head; ventral 2½ to 2 7/8. 11/12

Dark olive to blue above, gray on sides and below, more or less silvery. Sides sometimes with large silvery spots. Iris whitish. Fins brownish, second dorsal and anal with orange tints.

Red Sea, South Africa, Reunion, Malaya, East Indies, Japan, Polynesia, Hawaii, Queensland, New South Wales, Victoria, Tasmania, New Zealand, California. Also in the Atlantic and Mediterranean.

A. N. S. P., one example. Nova Scotia. Dr. G. E. Metheny. Large head.

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Dichistius, 215.

Diplodus, 65, 175.

auriventris, 175, 178.

capensis, 176.

cervinus, 178.

nigrofasciatus, 150, 151.

noct, 175, 176, 177.

rondeleti, 176.

sargus, 175.

trifasciatus, 165, 177.

Dipterodon, 215.

capensis, 215, 216.

multifasciatus, 216.

Dipterygonotus, 344, 346.

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dispilurus, Mullus, 302.

Parupeneus, 302.

Upeneus, 302.

distincta, Sciaena, 372.

dolorosus, Otolithus, 354, 355.

domina, Sillaginopsis, 433.

Sillago, 416, 432.

Dorada, 145.

dorsalis, Corvina, 393.

Dorsuarius, 204.

nigrescens, 204.

Genus Germo Jordan

Germo Jordan, Proc. Acad. Nat. Sci. Philadelphia, 1888, p. 180, (Type Scomber alatunga Gmelin, orthotypic.)

Orcynus (not Rafinesque 1815) Cuvier, Règne Animal, vol. 2, 1817, p. 314, (Type Scomber alatunga Gmelin, designated by Jordan and Everhmann, Genera of Fishes, 1917, p. 105.)

Body fusiform, robust, little compressed, tail short. Caudal peduncle slender, broadly depressed; with well developed keel each side. Head conic, compressed. Snout conic. Eye large, high, in front half of head, set in larger orbit with narrow marginal adipose rim. Mouth short. Maxillary reaches below eye, with oblique groove down at lower hind edge. Teeth small, uniserial, conic in jaws. Vomer and palatines with bands of minute teeth. Lower gill rakers 16 to 19. Vertebrae 18+20. Scales over trunk and tail, large, about 210 in lateral line. First dorsal with 13 to 15 spines, graduated shorter from first,

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Underscored figs. cuse 22/18.
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borneensis, Johnius, 372, 379.
bosquii, Pimelepterus, 203.
bostockii, Sillago, 422.
boutani, Sillago, 416, 421, 422.
Box, 180.
goreensis, 180.
lineatus, 180.
salpa, 181.
salpoides, 180.
vulgaris, 180.
Boxaodon, 344, 345.
cyanescens, 344, 345.
Brachymullus, 271.
brama, Sparus, 184.
brandesii, Upeneus, 275.
brevidorsalis, Sciaena, 352.
brevis, Dentex, 119.
britannus, Sparus, 237.
brunneus, Collichthys, 366.
Otolithoides, 364, 366.
Otolithus, 366.
Sciaenoides, 366.
bufonites, Aurata, 149.
Sparus, 149.
bungus, Lethrinus, 53, 54.
burrus, Sillago, 424, 425.

Otolithus, 379.
Pseudosciaena, 379.
Sciaena, 379.

interdorsal very short. Second dorsal and anal short, low, each followed by 7 to 9 finlets. Caudal small, widely forked. Pectoral very long, saber shaped, reaches second dorsal or anal finlet. Ventral small. Markings on abdomen pale and longitudinal, and formed by darker reticulating lines in interspaces.

Likely a single wide ranging species in tropical and subtropical seas.

Remarkable for the very long falcate or saber like pectoral fin.

Bellow Lib
Endowed by
134789

cantharus, Sparus, 182.

Cantharusa, 182.

Canthere, 182.

cantori, Johnius, 379, 380, 381.

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capensis, Charax, 179.

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Umbrina, 408, 410.

Caprupeneus, 271, 282.

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Evynnis, 170.

Pagrus, 170.

Sparus, 170.

Sparus (Pagrus), 170.

carinatus, Gerres, 242, 243.

Lethrinus, 7, 52.

Germo alalunga (Cetti)

Scomber alalunga Cetti, Fauna Sardica, p. 31, 1784 (type locality, Sardinia). — Bonnaterre, Tabl. Ichth., p. 139, 1788 (copied). — Walbaum, Artedi Pisc., vol. 3, p. 222, 1792 (copied).

Apogonichthys ~~[illegible]~~ brachygrammus (Jenkins).
Fowleria brachygrammus Jenkins, Bull. U. S.
Fish Comm., vol. 22, 1902 (1903), p. 448, fig.
20. Honolulu. — Jordan and Evermann,
Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903
(1905), p. 211 (Waikiki and Hilo).

Foa brachygramma Gilbert, Bull. U. S.
Fish Comm., vol. 23, pt. 2, 1903 (1905), p. 617
(off Molokai and between Maui and Lanai
in 23 to 73 fathoms). — Fowler, Proc. Acad.
Nat. Sci. Phila., 1906, p. 526 (Hawaii);
Copeia, No. 112, November 20, 1922, p. 83
(Hawaii).

Jordan and Seale, Proc. U. S. Nat. Mus., vol.
28, 1905, (p. 700) fig. 5. —

Scomber alatunga Gmelin, Syst. Nat. Linn., pt. 1, 1789, p. 1330, (on Alalonga Cetti, Hist. Nat. Sard., vol. 3, 1777, p. 191, type locality, Sardinia (specific name of Gmelin error for alalunga)). — Lacepède, Hist. Nat. Poiss., vol. 2, p. 599, 1800 (no locality); vol. 3, p. 21, 1802 (Mediterranean).

Thynnus alalonga Cuvier, Hist. Nat. Poiss., vol. 8, p. 120, pl. 215, 1831 (Pacific, Gulf of Gascony, Mediterranean). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 366, 1860 (Cape of Good Hope; Atlantic).

Thynnus alalunga Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 22, November 4 1931 (reference).

Orcynus alalonga Swainson, Nat. Hist. Animals, vol. 2, p. 238, 1839 (reference).

bands obliquely across cheek from eye. Ten vertical slightly darker bands than back, each little narrower than pale interspaces. Iris silvery white, with gray above. Edge of gill opening broadly neutral dusky, with underlaid appearance. Isthmus and chest dusted with dark brown. Spurious dorsal whitish basally, terminal $\frac{2}{3}$ neutral dusky or blackish. Soft-dorsal gray brown, with base narrowly pale to whitish. Caudal very pale brownish. Other fins whitish, paired fins with rather broad neutral dusky bases. Some examples show all the fins, excepting the pectorals, neutral dusky terminally.

Known only from the Philippines.

Germo alatunga Fowler, Proc. Acad. Nat. Sci. Philadelphia, p. 763, 1904 (Italy; Padang material).

Germo alalunga Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, p. 33, Dec. 1922 (Honolulu). — Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 15, Sep. 30, 1926 (compiled). — Fowler, Mem. Bishop Mus., vol. 10, p. 133, 1928 (Honolulu); vol. 11, no. 5, p. 325, 1931 (Honolulu).

Germo ralalunga Barnard, Ann. South African Mus., vol. 21, pt. 2, p. 799, Oct. 1927 (Saldanha Bay).

Scomber germon Lacépède,
Hist. Nat. Poiss., vol. 2, p. 598,
1800 (no type locality).

15540, 18874. Tilig, Lubang Island, China Sea, vicinity Southern Luzon. July 15, 1908. Length 137 to 142 mm.

17518. Ulugan Bay, Rita Island, Palawan. December 29, 1908. Length 143 mm.

19089. Varadero Bay, Mindoro. July 23, 1908. Length 122 mm.

15865. Danawan and Si Kmil Islands, vicinity Darvel Bay, Borneo. September 26, 1909. Length 113 mm.

17851 and 17852. Bumbum Island, vicinity Darvel Bay, Borneo. September 25, 1909. Length 137 to 143 mm.

24031. Labuandata Bay, Gulf of Boni, Celebes. December 18, 1909. Length 82 mm.

22727. Talisse Island, north of Celebes. November 9, 1909. Length 135 mm.

Germo germon Fowler, Journ. Acad. Nat. Sci. Philadelphia, ser. 2, vol. 12, p. 506, pl. 8 (lower figure), June 1904 (Padang). — White, Rec. Canterbury Mus., vol. 2, p. 19, 1913 (Turanganui River, New Zealand). — Thomson, New Zealand Journ. Sci. Tech., vol. 1, p. 6, fig. 3, 1918 (Cook Strait). — Phillips, New Zealand Journ. Sci. Tech., vol. 4, pp. 118, 124, 1921. — Phillips and Hodgkinson, New Zealand Journ. Sci. Tech., vol. 5, p. 93, 1922 (Auckland; 200 fms.).

radiating striae; 81 to 190 apical denticles, with 1 to 12 transverse series of basal elements; circuli very fine.

D. VII—I, 8, I; first spine 1 1/3 in head, first ray 2 to 2 1/2; A. I, 6, I, spine 3 1/5 to 4, first ray 1 4/5 to 2; caudal 1, deeply forked, slender lobes pointed; least depth of caudal peduncle 2 7/8; pectoral 1 2/5; ventral 1 1/3.

Back pale olive, sides and below pale to whitish, with buff to yellowish tinge. Iris pale yellowish brown, barbels same. Fins uniformly pale.

East Indies, Philippines, Melanesia, Micronesia, Polynesia, Hawaii

Thunnus (Germo) germon
Lac Cullock, Austral. Fish. Mem.,
No. 5, pt. 2, p. 263, Sep. 10, 1929
(reference).

Scomber germo (Commerson) Lacépède,
Hist. Nat. Poiss., vol. 3, p. 1, 1802
(East Indian Ocean, lat. 27° S., long.
103°). — F. d. Bennett, Narr. Whaling
Voy., p. 278, 1840 (Pacific). —
Jouan, Mém. Soc. Sci. Cherbourg,
vol. 8, p. 292, 1861 (Port de France,
New Caledonia).

6406, 6409, 19240. Rasa Island, Mantaquin Bay, Palawan. April 1, 1909. Length 96 to 137 mm. 4 examples.

13364, 14788, 21062. Tablayan, Mindoro Island. December 12, 1908. Length 108 to 143 mm.

8073 and 8075. Jacol Island, east of Zamboanga. September 9, 1909. Length 79 to 82 mm.

21206. Tianga Bay. March 17, 1908. Length 123 mm.

1953. Tingaan Island, between Jolo and Tawi Tawi. September 21, 1909. Length 127 mm.

9406 and 9407. Surigao, Mindanao. May 8, 1908. Length 125 to 127 mm.

14213. Tagamaka Island, Jolo Sea. January 7, 1909. Length 103 mm.

Germo germo Stead, Proc. Linn. Soc. New South Wales, vol. 31, p. 496, 1906; Add. Fish Fauna New South Wales, p. 20, 1907; Edible Fishes of New South Wales, p. 95, 1908 (Port Macquarie). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 217, June 27, 1925 (Shizuoka). — Jordan and Evermann, Aleas. Fap. Cal. Acad. Sci., vol. 12, p. 16, pl. 3, fig. 1, Sep. 30, 1926 (compiled). — Griffin, Trans. New Zealand Inst., vol. 58, p. 140, pl. 12, fig. 4, 1927 (Bay of Islands). — Anonymous, Illustrat. Jap. Aquat. Animals, vol. 1, pl. 25, fig. 4, 1931.

18151. Santo Domingo Harbor, Batan Island, Philippines. November 7, 1908. Length 129 mm. Lower gill rakers 23.

30585 U.S.N.M. New Guinea. William Macleay. Length 230 mm.

30873 U.S.N.M. Johnston Island. Jordan and Gilbert. Length 153 mm. Gill rakers 1+25.

Thunnus germo Mc Culloch, Australian Zool., vol. 2, p. 105, 1922. — Kishinouye, Journ. College Agric. Tokio, vol. 8, no. 3, p. 434, figs. 20, 46, 52, March 1923 (Hondo; South Hokkaido; Ogasawara Islands).

6733, 16525, 23138. Port Matalvi, off western Luzon. November 22, 1908. Length 112 to 128 mm.

11547. Port Matalvi. November 23, 1908. Length 110 mm.

14468, 13268, 23269. Port Palapag, east coast Luzon. June 2, 1909. Length 130 to 140 mm.

4614, 14602, 23259. Port Palapag. June 2, 1909. Length 120 to 131 mm.

7799. Port San Pio Quinto, Camiguin Island, China Sea, vicinity Batanes. November 10, 1908. Length 135 mm.

11583. Port Lusan, Mayampayan Island, west of Timar Island. December 17, 1908. Length 120 mm.

21354, 21511. 18779, Limalasag Island, Masamat Bay, east coast Luzon. June 12, 1909. Length 106 to 133 mm.

Thynnus pacificus Cuvier Valenciennes, Hist. Nat. Poiss., vol. 8, (1831) p. 133, (type locality, lat. 27° and 26° S. and 103° W. [tropical Indian Ocean]). — Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 366, (compiled).

Germo germon steadi Whitley, Rec. Austral. Mus., vol. 19, no. 1, p. 81, pl. 11, fig. 1, Aug. 2, 1933 (type locality, New South Wales; Port Macquarie).

Depth 3 2/3 to 4 3/4; head 3 to 3 1/2, width 1 1/2 to 1 4/5. Snout 3 1/4 to 3 2/5 in head; eye 4 1/3 to 5 3/4, 1 2/5 to 1 7/8 in snout, 1 1/6 to 1 3/4 in interorbital; maxillary reaches 1/3 to 2/5 in eye, expansion 2 1/4 to 4 in eye, length 2 1/2 to 2 4/5 in head; teeth small, conic, sharp, uniserial in jaws; vomer and palatines with minute teeth in patches; interorbital 3 1/5 to 4, ~~[illegible]~~. broadly convex. Gill rakers 3 + 16, lanceolate, 2/3 of eye; gill filaments little longer than eye.

Corselet with scales greatly enlarged anteriorly. Pectoral axillary scale 1 1/2 in fin.

D. XIII — III, 11 + 9, first spine 2 1/5 to 3 in head, soft dorsal height 2 1/4 to 4 1/4; A. III, 11 + 7 or 8, first branched ray 2 1/2 to 3 4/5; caudal 1 2/3 to 1 7/8, broadly lunate; ventral 2 1/2 to 3 1/4, rays I, 5; pectoral 2 2/3

Pl. Retire Follow Lit
Underscored see case
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Stieg

to 3 1/2 in fish without caudal, rays II, 34.

Steel blue or gray, below silvery white; side gray with rounded whitish spots on side of abdomen. Dorsals and caudal dusky brown; without yellow. Scarcely trace of yellow in middle of dorsal finlets, none on anal. Keel on caudal peduncle blackish, also pectoral fin, - other fins pale or grayish.

Cape Province, Indian Ocean, East Indies, Japan, New South Wales, Melanesia, Hawaii. Also in the Atlantic, Mediterranean and Caribbean Sea.

81 Hall Dos Fudlow Lit
Underscored figs. case 12/E.
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U. S. N. M., No. 22975. Chile.
Capt. Henderson. Length 545 mm.

A. N. S. P., one example. Padang,
Sumatra. A. C. Harrison and
H. E. Hiller.

A. N. S. P., No. 17076. Italy.
Bonaparte Collection ($\frac{27}{1}$). Dr.
J. B. Wilson. Dried skin.

A. N. S. P., one example. Havana,
Cuba. 1935. Ernest Hemingway.

8 Pt. Mill. ... Hollow Life
Catalogued Bks. copy
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Genus Parathunnus Kishinouye

Parathunnus Kishinouye, Journ. College Sci. Tokio, vol. 8, pt. 3, (March, 1923) p. 442, (Type Thunnus mebachi Kishinouye = Thunnus sibi Schlegel, monotypic.)

Body broad, caudal portion short. Head large, nearly equals body depth in young, shorter with age. Eyes large. Air bladder well developed, divided with 2 sections anteriorly. Scales in corselet very large. Lateral line slightly waved, above pectoral, with 190 scales. Vent median. Second dorsal and anal little higher than first dorsal, narrow, falciform. Caudal widely forked. Pectoral long, with age scarcely passes second dorsal origin, in young little longer. Young with gray sides marked with pale transverse lines and series of transverse dots.

Large fishes to two meters in length, with pinkish flesh and very voracious.

134783

filiformis, 96.

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Analysis of Species

a. Lateral axial golden band; maxillary reaches below eye; soft dorsal lower than spinous dorsal. *rosengarteni*.

a'. No golden lateral band; maxillary not reaching eye; soft dorsal higher than spinous dorsal. *obesus*.

8 Pt. Half Doc Follow Lit

Undescribed Lits. case 32/30.

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Parathunnus rosengarteni Fowler

Parathunnus rosengarteni Fowler,
Proc. Acad. Nat. Sci. Philadelphia,
vol. 86, ~~1934~~, p. 354, fig. 1, (type
locality, Key Largo, Florida). Aug. 2, 1934

Depth 3 2/3; head 3 1/2, width 1 9/10. Snout 3 1/5 in head from snout tip; eye 4 7/8, 1 3/5 in snout, 1 7/8 in interorbital anteriorly; maxillary reaches 1/4 in eye or opposite front pupil edge, expansion 2 in eye, length 2 1/2 in head from snout tip; teeth moderate in jaws; uniserial, uniform, simple, conic, 27 each side above and 32 below; interorbital 2 3/5 in head from snout tip, convex. Gill opening cleft high; large.

Scales small, compact and not free on body, very minute on lower flanks anteriorly. Corselet small, distinct, largely over basal part of pectoral. Lateral line complete, little high at

first, axial posteriorly and with rather long keel along each side of caudal peduncle. Each caudal lobe with small, slightly oblique, basal keel. Distinct and rather deep keel on upper costal region long as, and largely concealed by pectoral fin.

D. XVII — IV, 13, last ray as small connected finlet and followed by 8 finlets, first spine 2 in total head length, first branched ray 2 1/4; D. IV, 11, last ray as small connected finlet and followed by 7 finlets, first branched ray 2 1/2, fin origin below last dorsal rays; caudal 4 1/4 in rest of fish, widely lunate; pectoral rays I, 30, reaches last dorsal ~~ray~~

spine, length very slightly less than head or 3 3/4 in combined head and body to caudal base; ventral origin slightly behind pectoral origin, fin length 2 1/8 in head, rays $\frac{I}{=}$, 5.

Color of mounted fish blue black on head above and back. muzzle gray blue. Sides of head and body pale or grayish to soiled whitish. From behind eye rather dark golden band crosses corselet and continues along below lateral line to caudal peduncle. Iris bluish above, whitish below. Fins all blue black or dark blue, paired ones and anal more bluish; also ventral and anal with finlets, paler or grayish basally.

Florida.

U. S. N. M., No. 60174. Key Largo, Florida. Dr. George D. Rosenkarten. Length 71/3 mm. Type.

Parathunnus obesus (Lowe)

Thynnus obesus Lowe, Proc. Zool. Soc. London, 1839, p. 78 (type locality, Madeira); Trans. Zool. Soc. London, vol. 3, , p. 4 (Madeira) — Günther, Cat. Fish. Brit. Mus., vol. 2, 1860, p. 362 (compiled). — Cunningham, Proc. Zool. Soc. London, 1910, p. 112, fig. 5 (St. Helena). — Fraade, Bull. Soc. Portugaise Sci. Nat., vol. 10, No. 7, 1927, p. — (air bladder).

Parathunnus obesus Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, Sep. 30, 1926, p. 17 (compiled). — Fraade, Faune Ichth. Atl. Nord, Soubin, No. 8, Feb. 16, 1932, fig. (Canaries).

depth $3\frac{1}{2}$; head $3\frac{1}{2}$. Snout 3 in head; eye $5\frac{7}{8}$ [described as 7 to $8\frac{1}{2}$]; maxillary reaches $\frac{7}{8}$ to eye, expansion $1\frac{7}{8}$, length $3\frac{1}{2}$ in head from snout tip; interorbital rather high. Vertebrae 18 + 21.

D. XIII — ? + 9, first spine $2\frac{1}{2}$ in head, soft dorsal lobe 2; A. ? + 9, soft anal lobe $1\frac{1}{2}$; caudal $1\frac{1}{5}$, widely lunate; least depth of caudal peduncle 9; pectoral $1\frac{1}{6}$; ventral $2\frac{4}{5}$.

Back above lateral line, from snout tip to caudal base, deep blue, sides gray blue. Caudal peduncle, caudal fin and pectoral blackish. First dorsal slightly tinged with yellow. Finlets yellow, bordered with black. Length 190 cm.

(Trade)

Eastern Atlantic, Azores, Madeira, Canaries, St. Helena, Angola;

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Parathunnus sibi (Schlegel)

Thynnus sibi Schlegel, Fauna Japonica, Poiss., ptz. 45, (1844) p. 97, pl. 50, ✓ (type locality, Japan. — Bleeker, Verh. Batavia. Genootsch. (hal. Sch. Japan), vol. 25, (1853) p. 14, ✓ (reference).

Orcynus sibi Kitahara, Journ. Fisher. Bur. Tokio, vol. 6, (1892) p. 1, pl. 1, fig. 3.

Termo sibi Jordan and Snyder, Annot. Zool. Japon., vol. 3, p. 64, 1901 (Yokohama). — Snyder, Bull. Bur. Fisher., vol. 22, p. 523, 1902 (1904) (Honolulu). — Fowler, Bull. Bishop Mus., no. 38, p. 10, fig. 1, 1927 (Fanning Islands); Mem. Bishop Mus., vol. 10, p. 138, fig. 28, 1928 (Honolulu).

Parathunnus sibi Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, p. 33, 1922 (Honolulu). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, p. 218, June 27, 1925 (Tokyo, Yokohama, Yamada, Kobe, Osaka). — Anonymous, Illustrat. Jap. Aquatic Pl. Animals, vol. 1, pl. 25, fig. 2, 1931. — Tanaka, Journ. Faculty Sci. Univ. Tokyo, Zool., vol. 3, pt. 1, p. 22, Nov. 4, 1931 (reference).

Thynnus argenti-vittatus Cuvier Valenciennes, Hist. Nat. Poiss., vol. 8, (1831) p. 134, (type locality, Atlantic, "mer des Indes").

& Thynnus argenti-vittatus Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 366, (reference).

Germo argenti-vittatus Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, (December 1922) p. 33, (Honolulu evidently intended).

Thunnus mebachi Kishinouye, Mus. Gak. Ho, vol. 1, (1915) p. 19, pl. 1, fig. 11, (type locality, Japan).

Parathunnus mebachi Kishinouye, Journ. College Agric. Tokio, vol. 8, pt. 3, (March 1, 1923) p. 442, figs. 4, 22, 47, 49, (Ogasawara Islands, Ryukyu, Taiwan; San Pedro; Hawaii).

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Thunnus orientalis (not Schlegel) Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, September 30, 1926 (p. 14) (Monterey specimen).

Kishinoella zacalles Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, September 30, 1926 p. 27, pl. 7 (type locality, Honolulu market; on a photograph).

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Depth $3\frac{3}{4}$ to 4; head $3\frac{1}{5}$ to $3\frac{2}{5}$, width $1\frac{4}{5}$ to 2. Snout $3\frac{1}{5}$ to $3\frac{1}{4}$ in head from snout tip; eye 5 to 6, $1\frac{1}{2}$ to 2 in snout, $1\frac{1}{2}$ to $2\frac{1}{4}$ in interorbital; maxillary reaches $\frac{1}{4}$ to $\frac{1}{2}$ in eye, expansion $\frac{1}{2}$ in eye, length $2\frac{1}{2}$ to $2\frac{3}{5}$ in head from snout tip; interorbital 3 to $3\frac{1}{5}$, convex, low. Gill rakers 7 to III, 9 + 21 or 22, lanceolate, $1\frac{2}{5}$ in gill rakers which equal eye.

Corselet well developed, with largest scale over pectoral base. Body scales very small, irregular and closely adherent. Long scaly ridge over pectoral, extends back nearly opposite soft dorsal origin. Lateral keel on caudal peduncle well developed.

D. XIII — II, 11 + 9, first spine
2 2/5 to 2 1/2 in total head length,
first branched ray 2 2/5 to 3 1/3;
A. II — or III, 9 or 10 + 8 or 9, first
branched ray 2 1/3 to 4; caudal
1 1/3 to 1 2/3, widely forked;
least depth of caudal peduncle
11 1/5; pectoral 1 to 1 1/5, reaches
soft dorsal origin; rays II, 28;
ventral rays I, 5, length 2 1/2
to 2 2/3 in total head.

Gray on back, silvery white
below with gray tint. About
15 vertical pale or narrow
whitish bars, transversely,
with row of transverse
alternating small pale spots.
Fins all grayish, ventrals and
pectorals more or less pale
basally.

East Indies,
Japan, Riu Kiu, Hawaii,
California. Kishinouye says of
Parathunnus mebachi "In young
specimens under 7.5 kg in weight,
the sides are greyish with a few
colourless lines and series of
colourless dots, running transversely."
In the above description is
also included my account of
a Fanning Island specimen 750
mms in the Bishop Museum,
obtained December 6, 1924.

Fellow—Ind Cars
London

134789 793

Sillaginopsis panijus (Buchanan-Hamilton)

Cheilodipterus panijus BUCHANAN-HAMILTON, Fishes of Ganges, ~~1822,~~ pp. 57, 367, 1822 (Ganges estuaries).

Sillago panijus DAY, Fishes of India, pt. 2, 1876, p. 315 (footnote).

Sillago domina CUVIER, Hist. Nat. Poiss., vol. 3, 1829, p. 415, pl. 69. (Pondicherry). - VALENCIENNES, Règne Animal Cuvier, Ed. Ill. Poiss., 1839, pl. 13, fig. 1. - SWAINSON, Nat. Hist. Animals, vol. 2, ~~1839,~~ p. 205, - CANTOR, Journ. Asiat. Soc. Bengal, vol. 18, pt. 2, 1849 (1850), ~~p. 1003~~ (reference). - GÜNTHER, Cat. Fish. Brit. Mus., vol. 2, 1861, p. 246 (Ganges at Calcutta, Bengal Bay, India). - DAY, Fishes of India, pt. 2, 1876, p. 264, pl. 58, fig. 3 (Calcutta). - LLOYD, Rec. Indian Mus., vol. 1, 1907, p. 228 (Akyab).

Sillaginopsis domina GILL, Proc. Acad. Nat. Sci. Philadelphia, 1861, p. 505 (compiled). - FOWLER, Proc. Acad. Nat. Sci. Philadelphia, 1929 (1930), p. 654 (East Indies).

Depth $6^{2}/_{3}$; head $3^{1}/_{3}$, width $2^{2}/_{5}$. Snout $2^{1}/_{4}$ in head; eye 9, 4 in snout, $1^{1}/_{2}$ in interorbital; maxillary reaches $1^{1}/_{4}$ to eye, expansion $1^{2}/_{3}$ in eye, length $4^{1}/_{5}$ in head; teeth villiform, in bands in jaws and on vomer, outer row in jaws slightly enlarged; interorbital slightly convex, $6^{1}/_{2}$ in head; hind preopercle edge with large and rather blunt serrae, lower edge entire. Gill rakers 3 + 6, lanceolate, short, $^{1}/_{2}$ of gill filaments which $1^{1}/_{5}$ in eye.

Scales 85 in lateral line to caudal base and 3 more on latter; 7 above, 13 below, 36 predorsal forward slightly before nostrils; 7 or 8 between eye and angle of preopercle ridge and 2 more across preopercle flange. Scales with 7 to 11 basal radiating striae; 43 or 44 slender, minute apical denticles, with 6 or 7 transverse series of basal elements; circuli fine.

A1096 to A1098. Ternate market,
Ternate. November 26, 1909.
Length 274 to 340 mm.

Genus Kishinoella Jordan and Hubbs

Kishinoella Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, No. 2, (1924) p. 219, (Type Thunnus rarus Kishinouye, orthotypic.)

Body fusiform. Mouth small. Gill rakers 21. No air bladder. Second dorsal and anal slightly higher than first dorsal. Pectoral moderate, scarcely longer than head.

8 Pt. Half Doc Follow Lit

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Kishinoella rara (Kishinouye)

Thunnus rarus Kishinouye, Jour. Coll. Sci. Ho, vol. 1, (1915) p. 28, pl. 1, fig. 13, (type locality, Tokyo market).

Neothunnus rarus Kishinouye, Journ. College Agric. Tokio, vol. 8, pt. 3, (March 1923) p. 448, figs. 24, 48, 64, (Kyushyu, Nagasaki, mouth of Nonokawa River — Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 49, dec. 22, 1933 (Ceylon).

Kishinoella rara Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, (June 27, 1925) p. 219, reference).

— Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, Sep. 30, 1926 (p. 29, (compiled).

Germo macropterus (not Schlegel) Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 22, November 4, 1931 (reference, part).

Depth 4; head 3 3/4, width 1 2/3. Snout 3 1/5 in head; eye 7 1/4, 2 1/3 in snout, 2 2/3 in interorbital; maxillary reaches 2/5 in eye, expansion 1 2/3 in head, length 2 3/4 in head; interorbital 2 4/5, broadly convex. Gill filaments 1 1/2 times eye.

Corselet greatly developed, of large scales, with median fork extended little beyond depressed pectoral. Scales on body very small on lower front sides of abdomen, larger on tail. Lateral line distinct.

D. XIV.? — III, 10 + 9, first spine 2 1/2? (broken) in head, first branched ray 1 2/3; A. III, 10 + 9, second branched ray 1 2/3; caudal 1 1/4, widely forked; least depth of

caudal peduncle 9; pectoral $1\frac{1}{6}$, rays II, 27; ventral rays I, 5, fin $2\frac{1}{8}$ in head.

Back dark brown, especially on corselet above, sides and under surface white, with gray tints. Along sides of body below pectoral behind corselet; pale streaks more or less broken as bars and spots but all of longitudinal course. Fins brownish, with gray tints on paired ones. Caudal keel dark brown.

Ceylon, Philippines, Japan. Greatly like Parathunnus sibi (Schlegel), differing from Kishinouye's figure 1 of Parathunnus mebachi chiefly in a shorter pectoral not reaching quite opposite soft

dorsal. This distinction, together with the pale longitudinal lines on the side of the abdomen behind the corselet, will readily serve to separate it from *P. sibi*.

Depth 3 2/3; head 3 2/3. Snout 3 1/2 in head from snout tip; eye 6 1/4, 1 3/4 in snout, maxillary reaches 1/2 in eye; length 2 3/4 in head from snout tip; interorbital moderately high. Gill rakers 5 or 6 + 15 to 17.

Scales 220, minute. Lateral line axial, not waved, evenly slopes.

D. XIII., IV, 10 + 9, first spine 2 1/5 in total head, first branched ray 2 1/8; A. IV, 11 + 8, first branched ray 2; caudal 1 1/3, widely forked; least depth of caudal peduncle 9 1/3; pectoral 1 1/5, rays I, 31, I, 5, fin 2 2/5 in total head length.

Back - gray blue, sides silvery gray with colorless elongated spots in 5 longitudinal rows. Dorsals, pectorals and ventrals blackish, tips of second dorsal and anal washed yellow. Anal silvery. Finlets, both dorsal

Follow Lit

12/5 134783

carouna, Corvina, 384.

carutta, Corvina, 384.

Johnius, 370, 372, 384.

Labrus, 384.

Sciaena, 384.

castelnaui, Aplodon, 192, 193.

Cantharus, 184.

Pagrichthys, 145, 146.

Sparus, 146.

catalea, Corvina, 375.

cataleus, Johnius, 375.

catenula, Labrus, 160.

Catochaenum, 227.

filamentosus, 249.

limbatum, 230.

cauda lunata, Coracinus, 215.

celebica, Corvina, 393.

celebicus, Dentex, 93.

Synagris, 85, 93.

centrodontus, Sparus, 171.

Centropristes georgianus, 433.

salar, 435.

(Arripis) salar, 436.

(Mulloides) sapidissimus, 433.

tasmanicus, 436.

truttaceus, 435.

Centropristis salar, 435.

centurio, Lethrinus, 34.

and canal yellowish with grayish edge. Length 700 mm.
(Kishinouye.)

Follow Lit
Deaccessioned

cervinus, Charax, 177, 178.
Diplodus, 178.
Sargus, 177.
chaerorhynchus, Lethrinus, 45.
Chaetodon armatus, 437.
bifasciatus, 160.
constrictus, 437.
cyprinoides, 206.
Chanda setifer, 255.
chaptis, Bola, 375.
Corvina, 375.
Charax, 179.
capensis, 179.
cervinus, 177, 178.
puntazzo, 179.
Cheilodipterus aquila, 407.
panijus, 432, 433.
Cheilotrema, 370.
fasciatum, 370.
cherserydros, Parupeneus, 305.
Chetodon bifasciatus, 160.
cheverti, Gerres, 250, 251.
chinensis, Collichthys, 362.
Pagrus, 140.
choerorhynchus, Lethrinus, 6, 45.
Sparus, 4, 45.
chondropus, Sillago, 416, 430.
chrosopterus, Sparus, 135.
chrysargyra, Chrysophrys, 149.

5309. Guijulugan, east coast of Negros, Tanon Strait. April 2, 1908. Length 900 mm.

Genus Neothunnus Kishinouye

Neothunnus Kishinouye, Journ. College Sci. Tokio, vol. 8, pt. 3, p. 442, March 1923. (Type Thynnus macropterus Schlegel.)

Xenathunnus Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 163, 1934. (Type Xenathunnus guildi Fowler, orthotypic.)

Body fusiform, elongated, caudal part long. Head small. Eye well advanced, moderate. Maxillary reaches eye. Interorbital high. Lower gill rakers 21. Air bladder narrow, long, not divided anteriorly. Scales very small, about 270. Second dorsal and anal well elongated, sometimes reaching caudal base. Pectoral long, passes second dorsal origin. Ventral short. Sides grayish, with oblique transverse lines and silvery white dots alternating. Finlets bright yellow.

Widely distributed in tropical seas. Fishes of large size, some over 7 meters and next in size to the common tunnies. They feed on other smaller fishes and various marine invertebrates.

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Underscored figs. case 25 B.

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bifasciata, 160.

bifasciatus, 160.

bilobata, 147.

calamara, 158.

cardinalis, 170.

chrysargyra, 149.

coracinus, 146.

cristiceps, 166, 167.

cuvieri, 161.

datnia, 155.

dentatus, 168.

estuarius, 158.

forsteri, 68.

gibbiceps, 165.

globiceps, 148.

grandoculis, 134.

guttulatus, 142.

haffara, 150, 162, 163.

hasta, 155, 157, 163, 164.

laniarius, 153.

laticeps, 166, 167.
longispinnis, 155, 163.
madagascariensis, 146.

major, 139.

marginata, 164.

nasutus, 154.

natalensis, 150.

novae-caledoniae, 158.

pugicephalus, 167.

Analysis of Species

a.' Neothunnus. Soft dorsal and anal lobes lower, former sometimes reaches middle of fin; finlets yellow, often dark edged. albacora.

a.² Pelamythunnus. Soft dorsal and anal lobes longer, reach caudal fin; finlets bright yellow. guildi.

Neothynnus albacora (Lowe)

Thynnus albacora Lowe, Proc. Zool. Soc. London, vol. 7, (1839) p. 77, (type locality, Madeira); Trans. Zool. Soc. London, vol. 3, (1841) p. 4, (Madeira). — Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 365, (copied). — Cunningham, Proc. Zool. Soc. London, (1910) p. 109, fig. 4, (St. Helena; Madeira). — Clark, Proc. Roy. Phys. Soc. Edinburgh, vol. 19, p. 385, 1913, ~~(A. Bess)~~ (Ascension Island). — Boulenger, Proc. Zool. Soc. London, (1892) p. 135, (Muscat).

Orcynus albacora Poey, Enumerat. Pisc. Cub., 1875, p. 71, (Havana).

Neothynnus albacora Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, Sep. 30, 1926, p. 21, (compiled). — Frade, Faune Ichth. Atl. nord, Joubin, No. 8, Feb. 16, 1932, ~~fig~~ (Canaries). fig.

Thynnus macropterus Schlegel, Fauna Japonica, Poiss., pts. 5-6, (1844) p. 98, pl. 54, (type locality, Japan). — Günther, Cat. Fish. Brit. Mus., vol. 2, (1860), p. 365, (copied). — Day, Fishes of India, pt. 2, p. 253, 1876 (Tellicherry); Fauna British India, Fishes, vol. 2, p. 207, 1889.

Thunnus macropterus Bleeker, Verhand. Batavia. Genoots. (Nat. Ech. Japan), vol. 25, (1853), p. 14, (reference); Act. Soc. Sci. Ind. Neerl., no. 5, vol. 1, p. 6, 1856, ~~p. 6~~ (Amboina); Nat. Tijds. Ned. Indie; vol. 13, (1857), p. 384, (Batjan). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokio, vol. 32, (1913), p. 121, (reference). — Kishinouye, Sui. Gals. Ho, vol. 1, (1915), p. 19, pl. 1, fig. 12,

Thynnus (Orcynus?) macropterus Klunzinger, Fische Roth. Meer., vol. 1, p. 112, 1884 (Kosir).

Orcynus macropterus Kitahara, Journ. Fisher. Bur., Tokio, vol. 6, (1897), p. 2, pl. 2, fig. 3,

— Jordan and Hatsumura, Cat. Zool. & Pec. Tokyo Imp. Vertebr., p. 161, 1920 (Tokyo)

Thunnus (Germo) macropterus Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 47, fig. 5, Dec. 22, 1933 (Ceylon).

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Girella, 186, 187, 188.

blackii, 192.

carbonaria, 192.

cyanea, 187, 188.

elevata, 187, 190.

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leonina, 194.

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mentalis, 191, 192.

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multilineata, 192.

nebulosa, 187, 188, 196.

percoides, 192.

punctata, 187, 188, 194.

ramsayi, 191, 192.

sarissophorus, 200.

simplex, 191.

tricuspidata, 188, 191.

(Incisidens) tricuspidata, 191.

(Incisidens) triglyphus, 191.

zebra, 198.

(Girellichthys) zebra, 198.

zonata, 188, 194.

Girellichthys, 198.

zebra, 199.

Girellidae, 186.

Girellinae, 186.

Germo macropterus Jordan and Snyder, Annotat. Zool. Japan., vol. 3, (1901) p. 64, (Nagasaki). — Jordan and Evermann, Bull. Bur. Fisher., vol. 25, pt. 1, (1905 (1906)) p. 228, ("Hawaii"). — Jordan and Snyder, Bull. Bur. Fisher., vol. 26, (1906 (1907)) p. 209 (correction); Proc. U. S. Nat. Mus., vol. 32, (1907) p. 69, ~~fig.~~ (Catalina; later named Neothunnus catalinae). — Jordan and Jordan, Mem. Carnegie Mus., vol. 10, no. 1, dec. 7, p. 32, 1922, ~~p. 330~~ (Honolulu). — Fowler, Occas. Pap. Bishop Mus., vol. 8, no. 7, (1923) p. 376, (Honolulu); Mem. Bishop Mus., vol. 10, (1928) p. 134, (Kaiua Point, Oahu; Honolulu); vol. 11, no. 5, (1931) p. 325, (Honolulu). — Tanaka, Journ. Faculty Sci. Univ. Tokyo, Zool., vol. , pt. 1, p. 22, November 4, 1931 (reference).

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rüppellii, 238.
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gibbosus, Pachymetopon, 214.
gibsoni, Kyphosus, 204, 208.
Segutilum (Leptokyphosus), 208.
gigas, Gerres, 242.

Neothunnus macropterus Kishinouye, Journ. College Agric. Tokyo, vol. 8, pt. 3, p. 446, figs. 13, 19, 23, 45, 51, March 1923 (Japan Sea, Hokkaido, Hawaii, California). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 12, p. 219, June 27, 1925 (reference). — Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 20, pl. 5, Sep. 30, 1926 (Honolulu). — Whitley, Journ. Pan Pac. Res. Inst., vol. 3, no. 1, p. 12, Jan.-March (Santa Cruz Islands). — Anonymous, Illustrat. Jap. Aquat. Animals, vol. 1, pl. 25, fig. 3, 1931. — Fowler, Mem. Bishop Mus., vol. 11, no. 6, p. 400, 1934 (reference).

Thynnus germo (not Lacépède) Günther, Journ. Mus. Godeffroy, vol. 5, pt. 11, (1876) p. 151, pl. 96 (Ohitiroa Island).

, Albacora ralalanga (not Gmelin) Dresler, and Fesler, Bull. U. S. Fish Comm., vol. 7, (1887) (1889) p. 438, (compiled; part).

Germo germon (not Lacépède) Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, (1903) (1905) p. 174, (Honolulu, Hilo).

Thunnus allisoni Nowbray, Copeia, No. 78, Feb. 11, (1920) p. 9, with text fig.; (type locality, Biscayne Bay, east coast of Florida).

Germo allisoni Nichols, Amer. Mus. Novit., New York, No. 94, (Oct. 9, 1923) p. 3, (Christmas Island).

Neothunnus allisoni Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, (Sep. 30, 1926) p. 24, pl. 10, fig. 1, (compiled).

Hematthunnus allisoni Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 164, 1933 (reference).

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gaponicus, Synagris, 101.
geniguttatus, Lethrinus, 42.
genivittatus, Lethrinus, 6, 19, 42.
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darnleyensis, 228, 241.
equula, 237.
erythrourus, 237.
filamentosus, 227, 228, 248, 251.

Neotrionyx catalinae Jordan and Evermann, Occas. Pap. California Acad. Sci., vol. 12, (September 30, 1926) p. 19, pl. 4, (type locality, Santa Catalina Island, California; on a photograph!).

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forskaelii, Crenidens, 201.

forskali, Crenidens, 201.

forskalii, Crenidens, 200, 201.

forsteri, Aurata, 68.

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Sparus, 68.

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Pseudupeneus, 272, 302.

Upeneus, 302.

fraenatus, Lethrinus, 28.

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Nemipterus, 96.

Synagris, 86, 97, 98, 99.

furcraea, Corvina, 405.

fusciceps, Lethrinus, 58, 59.

fuscolineata, Umbrina, 413, 414.

fuscus, Cyphosus, 206.

Kyphosus, 206.

Parupeneus, 319.
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Pimelepterus, 210.

Pimelopterus, 206.

Xyster, 204, 205.

Depth 4 3/4; head 4 3/4. Snout 3 1/8 in head; eye 6 2/5, 2 in snout; maxillary reaches eye, length 2 2/3 in head; interorbital high. Gill rakers 9+21. Vertebrae 17+21.

Scales 270 in lateral line, entire, course slightly waved.

D. XIII, V, 9+9, first spine 2 1/5 in head, first branched ray 1 7/8; A. V, 10+8; first branched ray 1 4/5; caudal 1 1/4, widely lunate; least depth of caudal peduncle 8; ventral 2 1/3, rays I, 5; pectoral rays II, 33, fin 3 1/3 in fish without caudal.

Back nearly black, sides grayish, with oblique transverse lines and alternate series of silvery white dots. Iris greenish yellow. First dorsal yellow, also tips of second dorsal and dorsal finlets. Pectoral black on inner side, gray to yellowish outside.

Ventral gray, tinged yellow. dorsal and anal finlets yellow. Length 7 m. (Kishinouye.)

East Indies, Japan, Polynesia, Hawaii, California, Florida, Madeira, Canaries, St. Helena, Ascension Island. This large fish is next in size to members of the genus Thunnus. It swims near the surface of the sea and is caught by means of various lines and nets. The flesh is pink, firm and of excellent flavor. Its food is flying fish, trunk fish, squid, pteropods, heteropods, amphipods, squills and various other crustacea.

I am unable to find that the Atlantic form differs from the Pacific. Frade's figure shows the pectoral shorter and the soft dorsal and anal lobes longer than in Kishinouye's. Frade mentions, however, that the second dorsal

and anal ~~labes~~ are yellow, paler terminally, finlets yellow edged with black, and also caudal tips yellow. Young specimens show series of vertical silvery spots like those of young Thunnus thynnus.

British Museum (Natural History)

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Gerres, 227, 228, 248, 251.
Nemipterus, 128.
Pagrus, 166, 168.
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Mullus (Mulloides), 264.
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flavopinnis, Pagrus, 155, 158.
flavovittatus, Mullus, 271.
formosulus, Pentapus, 72.

Neothunnus guildi (Fowler)

†Hematthunnus guildi Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 164, pl. 12, 1934 (type locality, Papeete, Tahiti); Mem. Bishop Mus., vol. 11, no. 6, p. 400, 1934 (reference).

? †Scomber albacores Bonnaterre, Encyclop. method., p. 140, 1788 (type locality, Jamaica) (on †Loane).
Neothunnus ralbacores Jordan and Evermann, Aleas. Pap. Pal. Acad. Sci., vol. 12, p. 23, Sep. 30, 1926 (compiled).
Germo ralbacores Fowler, Mem. Bishop Mus., vol. 10, p. 134, 1928 (copied).

? Scomber sloanei Cuvier, Hist. Nat. Poiss., vol. 8, p. 148, 1831 (type locality, Jamaica).

? Neothunnus itoshibi Jordan and Evermann, Occas. Pap. Cal. Acad. Sci., vol. 12, p. 22, pl. 6, Sep. 30, 1926 (type locality, Honolulu market) (on a photograph!).

Nematthunnus itoshibi Fowler, Proc. Acad. Nat. Sci. Philadelphia, vol. 85, p. 164, 1933 (reference); Mem. Bishop Mus., vol. 11, no. 6, p. 400, 1934 (reference).

Germo macropterus (not Schlegel) Tanaka, Journ. Faculty Sci. Univ. Tokyo, Zool., vol. 3, pt. 1, p. 22, Nov. 4, 1931 (part; reference).

Depth 4; head 4, width 1 3/5. Snout 2 7/8 in head from snout tip; eye 7, 2 1/2 in snout, 2 3/5 in interorbital; maxillary reaches opposite front eye edge, expansion 1 1/2 in eye, length 2 3/5 in head from snout tip; interorbital 2 2/3 in head.

Scales small, cycloid, enlarged and narrowly imbricated above pectoral base, not forming distinct or defined corselet. Chest, breast, belly, and lower sides of belly, with very small scales. Keel along side of caudal peduncle moderate.

D. XIII — V, 8 + 10, first spine 2 in head, second and third very slightly longer and all close set; soft lobe very long and

slender; reaching caudal base and last ray as small adnate finlet; D. V, 8 + 9, long soft lobe reaches tips of median caudal rays, last ray as adnate finlet; caudal long as head, widely forked; pectoral rays V, 33, long as head; ventral I/7, rays I, 5.

Back dark neutral gray, with bluish tinge, sides and below silvery to gray or whitish. Iris neutral gray. Inside mouth dark gray. Spinous dorsal - dark neutral gray, neutral black terminally. Soft dorsal lobe grayish basally, yellow terminally. Anal lobe like dorsal lobe. Finlets all uniform bright yellow. Caudal

largely yellow, basally grayish. Paired fins neutral gray, lower faces of both grayish white.

Japan, Polynesia, Hawaii; Atlantic if Scomber albacores Bonnaterre and Scomber slouanei Cuvier are the same.

Kishinouye describes this fish as a variety of Neothynnus macropterus:

"The second dorsal and anal are much elongated, especially in the variety named itoshibi of Gesunaga, the tips of their fins are whitish and reach to the base of the caudal. So far as I have examined there is no marked difference in anatomical structure between the long finned variety and the ordinary form, except in the length of the second dorsal and anal fins."

A. N. S. P., No. 55982. Tahiti, Society Islands. 1933. Eastham Guild. Length 1830 mm. Type.

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12/2
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Evynnis, 64, 170.

cardinalis, 170.

edita, 144.

Exocallus, 180.

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Sparus, 146.

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Oplegnathus, 219.

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Sargus, 177.

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Scarodon, 217, 219.

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Upeneoides, 328.

fauvelii, Corvina, 404.

Sciaena, 404.

filamentosum, Gerres, 249.

filamentosus, Cantharus, 102.

Catochaenum, 249.

Dentex, 117, 118, 126, 128.

Dentex (Heterognathodon), 102.

Diapterus, 238, 249.

Genus Euthynnus Jordan and Gilbert

Euthynnus (Lütken) Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 16, (1882) p. 429, (Type Thynnus thunnina Valenciennes = Scomber alleteratus Rafinesque, orthotypic.

Thynnichthys (not Bleeker) Giglioli, Cat. Pesc. Ital., (1880) p. 25, (Type Thynnus thunnina Valenciennes, monotypic.)

Body fusiform, robust or plump. Head moderate. Mouth rather large. Maxillary reaches half way in eye. Teeth rather well developed. Vomer and palatines sometimes with villiform teeth. Lower gill rakers 22 to 28. Corselet developed, body otherwise scaleless. Lateral line slittle waved. Vertebrae 38 or 39. dorsal spines 15 or 16, first spines rather high, fin continuous with second dorsal. Soft dorsal and anal low. Caudal lunate. Paired fins rather small.

Fishes of about a meter in length, very voracious and living in temperate and tropical seas. They do not form in large schools, though often approach the shores. Several species have been described. They are with

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Eudynama, 145.
Eudynamys, 145.
Eusalpa, 181.
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bathybium, 100.
bathybius, 100.
virgatum, 107.

dark markings on the naked part of the back and usually have gray spots in the pectoral region above the ventrals.

Analysis of Species

a'. Vomerine teeth present; dark longitudinal bands on back. lineatus.

a². Vomerine teeth absent; dark oblique bands on back. albteratus.

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St Barts Hospital Library

multifasciatus, 272, 294, 295, 300, 308.

orientalis, 272, 294.

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Hoplognathus, 224.

Oplegnathus, 218, 224.

Euthynnus lineatus Kishinouye

Euthynnus lineatus Kishinouye, Jour. Coll. Agric. Tokyo, vol. 3, (1920) p. 113, (type locality, Manzanillo, Mexico); Journ. Colleg Agric. Tokio, vol. 8, no. 3, (March 1923) p. 459, fig. 2, 1, (type).

Katsuwonus lineatus Wales, Copeia, no. 4, dec. 31, (1932) p. 163, (off Santa Margarita Island).

Euthynnus alleteratus (not Rafinesque) Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 22, November 4, 1931 (part; reference).

Depth $3\frac{4}{5}$; head $3\frac{1}{4}$. Snout 4 in head from snout tip; eye $5\frac{7}{8}$, $1\frac{3}{4}$ in snout, adipose lids narrow; maxillary reaches $\frac{2}{5}$ in eye, length $2\frac{4}{5}$ in head from snout tip; one row of teeth on vomer and palatines; interorbital low.

Corselet distinct, extends beyond pectoral. Lateral line axial along side of body, but little marked.

D. XIII — IV, 8 + 8, first spine $2\frac{1}{10}$ in total head length, first branched ray $4\frac{2}{3}$; A. (rays not given or shown) — + 9.?, fin height 4; caudal $1\frac{4}{5}$, lunate; least depth of caudal peduncle $10\frac{4}{5}$; pectoral $2\frac{1}{4}$; ventral $2\frac{3}{4}$.

Three dark longitudinal streaks or bands on naked region behind corselet above lateral line. Above ventral and below pectoral 4 to 6 short dark bars or spots.

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undovittatus, 369.
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Pseudotolithus bleekeri, 392, 395.
mitsukurii, 370, 390, 391.
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aurantiacus, 306.
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bilineatus, 273, 313.
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chrysonemus, 273, 312.
chrysopleuron, 273, 315.
cinnabarinus, 273, 314.
crassilabris, 273, 315.
cyclostomus, 272, 304.
cyprinoides, 273, 316.
(Hogbinia) filamentosus, 306.
fraterculus, 272, 302.
indicus, 272, 282, 287, 288.
ischyrus, ~~303~~ 302.
jansenii, 273, 317.
jeffi, 271, 272, 281.
luteus, 273, 312, 313.
macronemus, 272, 279.
moana, 296, 300.

Length 480 mm. (Kishinouye.)

Pacific coast of Mexico.

Only known from the type and the example 580 mm. long recorded by Walen, who give a reference to the "Cross bred Mackerel" in Thomas and Thomas.'

'Game Fish of the Pacific, 1930, upper figure opposite page 28.

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porphyreus, Pseudupeneus, 273, 302, 310.
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japonica, 395.
macrophthalmus, 376.
microlepis, 406.
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mitsukurii, 390.
plagiostoma, 402.
polyactis, 369.
polycladiscus, 388.
schlegeli, 395.

Euthynnus alleteratus (Rafinesque)

Scomber alleteratus Rafinesque, Caratt. nuov. An. Sicilia, (1810) p. 46, (type locality, Palermo, Sicily.

Scomber alletteratus Rafinesque, Caratt. nuov. An. Sicilia, (1810) pl. 2, fig. 3,

Euthynnus alliteratus Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 16, (1883) p. 430, (compiled).

Euthynnus alleteratus Snyder, Proc. U. S. Nat. Mus., vol. 42, (1912) p. 410, (Tokyo; Kagoshima), p. 496 (Okinawa). — Jordan, Tanaka, Snyder, Journ. College Sci. Tokio, vol. 32, (1913) p. 120, fig. 88, (reference). — Jordan and Jordan, Mem. Carnegie Mus., vol. 10, No. 1, (Dec. 1922) p. 31, (Hilo). — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 22, November 4, 1931 (reference). — Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 51, Dec. 22, 1933 (Gulf of Manaar; west and south coasts).

Euthynnus alletteratus Fowler, Copeia, no. 112, (Nov. 20, 1922, p. 82) (Hawaii).

— Fowler and Bull, Bull. Bishop Mus., no. 26, (1925, p. 11) (off Laysan).

— Fowler, Mem. Bishop Mus., vol. 10, (1928) p. 133, pl. 9. a, (Honolulu, Hawaii); vol. 11, no. 5, (1931) p. 325, (Honolulu);

Fowler
Proc. Acad. Nat. Sci. Philadelphia, vol. 86, (1934) p. 446 (Natal; Atlantic, Hawaii); Mem. Bishop Mus., vol. 11, no. 6, p. 409, 1934 (Hawaii).

Euthynnus alleterata Kishinouye, Journ. College Agric. Tokio, vol. 8, ~~no.~~ pt. 3, (March 1923) p. 457 (diagnosis in key).

Euthynnus alliteratus Mc Culloch, Mem. Austral. Mus., vol. 5, pt. 2, (Sep. 10, 1929) p. 262, (reference).

Gymnosarda alleterata Jordan and Snyder, Annot. Zool. Japon., vol. 3, (1901) p. 64 (Yokohama).

— Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 57, Dec. 23, 1933 (Gulf of Manaar; west and south coasts).

Thynnus leachianus Risso, Hist. Nat. Eur. Mérid., vol. 3, (1826) p. 414, (type locality, Nice).

Scomber quadripunctatus Geoffroy St. Hilaire, Descript. Egypte, Poiss., (1827) p. 331, pl. 24, fig. 5, (type locality, Red Sea).

Thynnus thunnina Cuvier Valenciennes, Hist. Nat. Poiss., vol. 8, (1831 Jan. 1832), p. 104, pl. 212, (type locality Mediterranean — Valenciennes, Hist. Nat. Règne Animal, Cuvier, Poiss; pl. 46, fig. 1, 1839. — Schlegel, Fauna Japonica, Poiss., pts. 5-6, (1844) p. 95, pl. 48, (Japan). — Bleeker, Verh. Batavia. Genoot. (Natuurkeel.), vol. 24, (1852) p. 36, (Batavia, Cheribon, Samarang, Pasuruan); (Nat. Tijds. Ned. Indie, vol. 3, (1852) p. 14, (reference); Nat. Tijds. Ned. Indie, vol. 6, (1854) p. 457, (Amboina); vol. 7, (1854) p. 227, (Macassar), p. 312 (Tjiringin); Act. Soc. Sci. Ind. Neerl., vol. 1, No. 5, (1856) p. 6, (Amboina); Nat. Tijds. Ned. Indie, vol. 13, (1857) p. 384, (Batjan).

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pleurostictus, Pentapus, 81, 82.

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Parupeneus, 275.

Pseudupeneus, 272, 275.

Upeneus, 275.

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Gerres, 234.

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Gerres, 234.

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Upeneus, 259.

— Günther, Cat. Fish. Brit. Mus., vol. 2, p. 364, 1860 (Mediterranean; tropical Atlantic). — Bleeker, Verslag. Kon. Akad. Wet. Amsterdam, vol. 12, p. 31, 1861 (Singapore); Ned. Tijds. Dierk., vol. 2, p. 173, 1865 (Siam; reference). — Playfair, Fishes of Zanzibar, p. 67, 1868 (Seychelles). — Day, Fishes of India, pt. 2, p. 252, pl. 54, fig. 6, 1876 (Bombay). — Günther, Journ. Mus. Godeffroy, vol. 5, pt. 11, p. 150, pl. 95, 1876 (Society Islands); Rep. Voy. Challenger, vol. 31, pt. 2, p. 17, pl. 2, fig. d, 1888 (1889) (Admiralty Islands to Japan).
— Klunzinger, Fische Roth. Meer., vol. 1, p. 111, 1889. — Günther,

— Day, Fauna British India, Fishes, vol. 2, p. 205, fig. 72, 1889. — Weber, Siboga Exped., vol. 57, Fische, p. 401, 1913 (Kawa, Ceram, Banda). — Chabanaud, Vers. Océanogr. Pech. Indo Chine, 1re note, p. 22, 1926 (reference).

Thynnus braziliensis Cuvier, Hist. Nat. Poiss., vol. 8, p. 110, 1831 (Jan. 1832) (type locality, Brazil).

Thynnus brevipinnis Cuvier, Hist. Nat. Poiss., vol. 8, p. 112, 1831 (Jan. 1832) (type locality, Mediterranean). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 365, 1860 (compiled).

Pelamys affinis (not Cantor) Fowler, Proc. Acad. Nat. Sci. Philadelphia, (1904) p. 761, (Honolulu).

Gymnosarda pelamis (not Linnaeus) Evermann and Seale, Bull. Bur. Fisher., vol. 26, (1906) p. 66, (Bulan).

Euthynnus yaito Kishinouye, Pub. Exp. Fish. Japan, vol. 1, (1915) p. 22, pl. 1, fig. 15, (type locality, Japan); Journ. College Agric. Tokio, vol. 8, no. 3, (March 1923) p. 457, figs. 26, 54, 55 (~~blood vessels~~), (~~skeleton~~), (Chiba-ken, Tsuruga, Dutch East Indies). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 220, June 27, 1925 (Choshi). — Anonymous, Illustr. Jap. Aquat. Animals, vol. 1, pl. 24, fig. 5, 1931. — Chevey, Inst. Océanogr. Indo Chine, 19e note, p. 26, Aug. 25, 1932 (Annam).

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Pentaprion, 226, 256.
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peronii, 73.
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porosus, 74.
setosus, 78.
trivittatus, 81.
unicolor, 70.
vitta, 71.
vittatus, 80.
xanthopleura, 80, 82.

Depth 3 1/2 to 4 1/4; head 3 2/5 to 3 4/5, width 2. Snout 3 1/5 to 3 2/3 in head from snout tip; eye 4 4/5 to 7 1/2, 1 3/4 to 2 1/4 in snout, 1 1/3 to 1 4/5 in interorbital, adipose lids moderate. 1/4 to 2/5 in eye, expansion 1 2/3 to 1 3/4, length 3 maxillary reaches 2 1/2 to 2 3/4 in head from snout tip; teeth small, conic, simple, uniserial in jaws, none on palate or if present deciduous, sometimes roof of few small teeth on vomer interorbital 2 2/3 to 4, broad, depressed to slightly convex. Gill rakers 8 to 10 + 2 to 2 7, lanceolate, 1/2 in gill filaments or 1 to 1 1/3 in eye.

Corselet well developed, scales narrowly exposed, extends beyond pectoral. Lateral line slightly undulated, axial.

D. XV or XVI — I or II, 10 to 12 + 8 or 9, second spine 1 2/3 to 2 1/3 in total head length, first branched ray 3 to 4 1/8; A. II or III, 10 to 12 + 6 to 8,

first branched ray 3 1/8 to 4 1/3; caudal 1 1/3 to 1 2/3, deeply lunate; least depth of caudal peduncle 10 3/4 to 12 1/8; pectoral 1 3/4 to 2, rays II, 23 or 24; ventral rays I, 5, length 2 1/5 to 3 1/3 in total head length.

Dark gray or steel bluish above, sides and below white. Above lateral line 13 or 14 inclined, waved, dark stripes, not or only faintly extending below. Below pectoral 5 round black spots, size of pupil. Upper fins dusky, lower pale.

Red Sea, Indian East Indies, Siam, Philippines, Riu Kiu, Japan, New South Wales, Melanesia, Polynesia, Hawaii. Also in the Atlantic and Mediterranean. This seems the same as Euthynnus yaito Kishinouye. This author distinguishes it

from his E. lineatus from California by the dark bands on the back, oblique, not longitudinal in the California fish. Both species are said to differ from E. alleterata by the presence of vomerine teeth. Kishinouye's contention of gill rakers 8 to 10 + 22 to 24 for E. yaito does not hold as E. alleterata has 11 + 28.

6719. Manila market, Manila, Luzon. December 4, 1908. Length 362 mm.

9368. Cebu market, Cebu. August 27, 1909. Length 344 mm.

U. S. N. M., 28662. No locality. Australian Museum. Length 350 mm.

U. S. N. M., 52799. Hawaii. Bureau of Fisher. Length 270 mm. (caudal tips broken).

U. S. N. M., 56200. Bulan, Philippines. Bureau of Fisheries (4184). Length 405 mm. As Gymnosarda pelamis.

U. S. N. M., 72627. Batavia, Java. 1909. Bryant and Palmer. Length 257 mm. The dark lines on the back are oblique and much more regular than in Kishinouye's figure.

U. S. N. M., 72628. Batavia, Java. 1909. Bryant and Palmer. Length 320 mm. Like the above specimen.

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parvisquamis, Sillago, 416, 427.

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Pemilepterus, 203.

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aurolineatus, 71, 76.

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curtus, 71, 84.

cyanotaeniatus, 70.

dux, 71, 83.

hellmuthii, 70, 73.

macrurus, 70, 72.

multidens, 70.

nemurus, 70, 72, 74.

nubilus, 34, 71, 78.

peronii, 70, 73.

porosus, 70, 74.

setosus, 71, 78, 79.

trivittatus, 81.

unicolor, 70.

vitta, 69, 70, 71.

vittatus, 70.

xanthopleura, 80.

Genus Katsuwonus Kishinouye

Katsuwonus Kishinouye, Jui. Gaku. Ho, vol. 1, (1915,) p. 21, (Type Scomber pelamis Linnaeus, monotypic.

Pelamys (Klein) Walbaum, Artedi Pisc., vol. 3, (1792,) p. 584, (Atypic. (Type Scomber pelamis Linnaeus, understood by tautonomy.) (Inadmissible.)

Body plump, cylindrical. Teeth only in jaws, 40 in each. Lower gill rakers 41. Vertebrae 41.

One species only, in temperate and tropical seas.

Katsuwonus pelamis (Linnaeus)

Scomber pelamis Linnaeus, Syst. Nat., ed. 10, pt. 1, (1758) p. 297, (type locality, "In pelagico inter tropicos"). — Osbeck, Reise Ost Ind. China, pp. 84, 87, 1765 (Canaries), p. 365 (Java), p. 372 (off South Africa). — Linnaeus, Syst. Nat., ed. 12, pt. 1, p. 492, 1766. — Forskål, Descript. Animal., p. 16, 1775 (Smyrna; Constantinople). — Bonnaterre, Tabl. Ichth., p. 139, 1788 (Atlantic; between tropics; Mediterranean).

— Gmelin, Syst. Nat. Linn., pt. 1, p. 1330, 1788. — Walbaum, Artedi Pisc., vol. 3, p. 215, 1792 (compiled).

Scomber pelamys Cornide, Pesc. Galicia, p. 250, 1788 (reference). — Blumenbach, Handb. Naturgesch., p. 278, 1799. — Schneider, Syst. Schth. Bloch, p. 23, 1801 (compiled). — F. D. Bennett, Narrative Whaling Voy., p. 278, 1840 (Pacific). — G. Bennett, Gatherings Nat. Australia, p. 21, 1860 (Mauritius; Aden; Sydney).

depth 2 3/4 to 2 4/5; head 2 1/5 to 2 1/4, width 2 1/3 to 2 3/5. Snout 5 1/3 to 5 3/4 in head from snout tip; eye 3 1/5 to 3 4/5, greater than snout or interorbital; maxillary reach 3/5 or till opposite hind eye edge, expansion 1 3/5 to 1 3/4 in eye; teeth villiform, in bands in jaws and small patches on vomer and palatines; interorbital 4 1/2 to 5, slightly convex; narrow jagged infraorbital edge; preopercle ridge entire and edge entire except few short denticles around angle. Gill rakers 4+11, lanceolate, much longer than gill filaments or 1/2 of eye.

Scales 21 or 22 in lateral line to caudal base and 3 or 4 more on latter, 2 above, 5 or 6 below, 4 or 5 predorsal, 2 rows on cheek;

Thynnus pelamys Cuvier, Hist. Nat. Poiss., vol. 8, (1831) p. 113, pl. 214, (Tahiti; Dangerous Archipelago).
— Valenciennes, Règne Animal, Cuvier, Poiss., 2 ll., (1839) pl. 47, fig. 2.
— Schlegel, Fauna Japonica, Poiss., pts. 5-6, (1844) p. 96, pl. 49, Nagasaki.
— Richardson, Ichth. China Japan, (1846) p. 267, Japan, Fr. Malay Archipelago, Sunda, Polynesia, South America, Canaries, Africa).
— Bleeker, Nat. Tijd. Ned. Indie, Neerl., vol. 1, no. 5, (1856) p. (6) 41, (Amboina); Nat. Tijds. Ned. Indie, vol. 13, (1857) p. 384, (Batjan); vol. 21, p. 53; 1860 (reference).
Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 364, (Cape Seas).
— Playfair, Fr. Zanzibar, p. 67, 1866 (off E. Africa).
— Day, Fishes of India, pt. 2, p. 252, 1876.
Fauna British India, Fishes, vol. 2, p. 206, 1889.

Thynnus pelamijs Bleeker, Verh. Batavia. Genoott. (Nat. Ichth. Japan), vol. 25, (1853) p. 14, (reference).
— Martens, Preuss. Exped. Ost Asien, vol. 1, p. 390, 1876 (Yokohama). — Steindachner and Döderlein, Denks. Akad. Wiss. Wien, Math.-naturw. Kl., vol. 49, pt. 1, p. 179, 1885 (Galapagos; Peru; Society Islands; Cuba; St. Helena). — Day,

Euthynnus pelamys Jordan and Gilbert, Bull. U. S. Nat. Mus., No. 16, (1882) p. 430, pl (copied Günther. — Tanaka, Journ. Faculty Sci. Imp. Tokyo, Zool., vol. 3, pt. 1, p. 322, November 4, 1931 (reference). Euthynnus pelamis Snyder, Proc. U. S. Nat. Mus., vol. 42, (1912) p. 410, (Misaki). — Tanaka, Fishes of Japan, vols. 1–10, (1912) p. 140, pls. 37, 39, 40,

— Jordan and Jordan, Mem. Carnegie Mus., vol. 10, No. 1, (Dec. 1922) p. 31, (Honolulu). — Fowler, Mem. Bishop Mus., vol. 10, (1928) p. 132, (Honolulu). — Mc Culloch, Mem. Austral. Mus., vol. 5, pt. 2, (Sep. 10, 1929) p. 262, (reference). — Fowler, Mem. Bishop Mus., vol. 11, No. 5, (1931) p. 325, (Honolulu); Proc. Acad. Nat. Sci. Philadelphia, vol. 83, Nov. 12, 1931, p. 444 (Singapore); Fowler, Mem. Bishop Mus., vol. 11, No. 6, p. 400, 1934 (reference). (Proc. U. S. Nat. Mus., vol. 80, art. 6, p. 9, 1932 (off Papeete). — Deraniyagala, Ceylon Journ. Sci., vol. 18, pt. 1, p. 50, Dec. 22, 1933 (Ceylon; Malé, Maldives).

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Gymnosarda pelamis Evermann and Seale, Bull. Bur. Fisher., vol. 26, 1906 (1907), p. 61, (Bacan).

Jenkins, Bull. U. S. Fish. Comm., vol. 22, 1902 (1903), p. 441, (Honolulu). — Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, 1903 (1905), p. 172, (Honolulu; Hilo).

— Kishinouye, Journ. College Sci. Tokyo, vol. 2, 1911, p. 383, (Bonin Islands). — Barnard, Ann. South Afric. Mus., vol. 21, pt. 2, p. 797, October 1927 (Cape Seas).

Katsuwonus pelamis Kishinouye, Sui. Gak. Ho, vol. 1, 1915, p. 21, pl. 1, fig. 14,

Katsuwonus pelamis Kishinouye, Journ. College Agric. Tokyo, vol. 8, no. 3, March 1923, p. 453, figs. 5, 14, 19, 25, 53, 57, (Japan, Ryukiu, Ogasawara, Island, Hokkaido).

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Scomber pelamides Lacépède, Hist. Nat. Poiss., vol. 3, (1802), p. 14, (on Linnaeus).
vol. 7, p. 599, 1800 (on Linnaeus);

Thynnus vagans Lesson, Dict. Class. Hist. Nat. Paris, vol. 15, (1829), p. 279, (type locality, Tahiti); Voy. Coquille, Zool., vol. 2, (1831), p. 162, pl. 32, (Tahiti).

Euthynnus vagans Jordan, Tanaka, Snyder, Journ. College Sci. Tokio, vol. 33, (1913), p. 119, (reference).

black margined membranes, dark lateral line slender, well exposed and each with small basal scale; scales with 10 or 11 basal radiating striae, 42 to 63 rather weak apical denticles, in 2 or 3 transverse series and circuli moderate.

D. VII — I, 9, I, fourth spine 2 1/3 to 2 3/4 in total head length; second ray 1 2/3 to 1 3/4; D. II, 8, I, second spine 2 3/5 to 3 2/3, second ray 1 3/4 to 2 1/10; caudal 1 2/5 to 1 3/5, rounded [illegible] least depth of caudal peduncle 2 7/8 to 3 1/8; pectoral 1 2/3

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major, 139.

(Chrysophrys) major, 139.

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nasutus, 154.

nigripinnis, 154.

ruber, 140, 144,171.

spinifer, 143, 169.

tumifrons, 123.

unicolor, 140, 141.

Katsuwonus vagans Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, p. 219, June 27, 1925 (reference). — Anonymous, Ill. Jap. Aquat. Animals, vol. 1, pl. 24, fig. 3, 1931.

Thynnus affinis Cantor, Journ. Asiatic Soc. Bengal, vol. 18, pt. 2, p. 1088, 1849 (1850) (type locality, Sea of Pinang). — Günther, Cat. Fish. Brit. Mus., vol. 2, p. 363, 1860 (type). — Jordan and Snyder, Annot. Zool. Japan., vol. 3, p. 64, 1901 (Yokohama, Tosa, Satsuma, Hakodate).

Apogonichthys striatus (Smith and Radcliffe)

Amia striata Smith and Radcliffe, Proc. U. S. Nat. Mus., vol. 41, 1912, p. 437, pl. 35, fig. 1. West coast of Luzon (Lat. 16° 30' 36" N. Long. 120° 11' 6", in 45 fathoms).

Depth 3 1/4 to 4; head 2 7/8 to 4, width 1 7/8 to 2. Snout 3 1/8 to 3 1/2 in head from snout tip; eye 5 to 7 3/4, 1 3/4 to 2 1/8 in snout, 1 1/2 to 2 4/5 in interorbital, adipose lids little developed; maxillary reaches 1/5 to 1/3 in eye, expansion 2 1/5 to 2 1/4, length 2 2/3 to 2 4/5 in head from snout tip; teeth small, simple, conic, uniserial, none on vomer, present or absent on palatines; interorbital 2 1/2 to 3, 2 1/8, 1; Gill rakers 17 + 37, 1 4/5 in gill filaments, which equal 1 1/2 times eye.

Scales with well developed corselet. Lateral line curved anteriorly, straight below soft dorsal to caudal base.

D. XIII to XVI — I to III, 12 or 13 + 8, first spine 2 to 2 1/8 in total head length, first branched ray 3 1/8 to 3 1/4; A. II or III, 12 + 7, first branched ray 3 3/4 to 3 7/8; caudal 1 3/5 to 1 4/5,

deeply lunate; least depth of caudal peduncle 12 $\frac{3}{5}$ to 13 $\frac{1}{4}$; pectoral 1 $\frac{7}{8}$ to 2, rays $\frac{I}{=}$, 26; ventral rays $\frac{I}{=}$, 5, fin 2 $\frac{3}{5}$ to 2 $\frac{7}{8}$ in head.

Dark blue above, with greenish shade. On each side of body below lateral line 4 or 5 dark brown longitudinal streaks, parallel with lower profile of body. Below body white. Fins brown.

South Africa, Malaya, East Indies, Philippines, Ryu Kyu, Japan, New South Wales, New Zealand, Micronesia, Polynesia, Hawaii. Also in the Atlantic.

A. 1095. Ternate market, November 26, 1909. Length 610 mms.

U. S. N. M., No. 44897. Japan. Government of Japan. Length 428 mm.

U. S. N. M., No. 89768. Tahiti. Pinchot Expedition. Length 485 mm. (caudal tips broken).

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Pachymetopon, 203, 214.
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Pagrus, 145.
anglicus, 164.
arthurius, 140.
australis, 152.
berda, 157.
bifasciatus, 160.

Genus Auxis Cuvier

Auxis Cuvier, Règne Animal, ed. 2, vol. 2, (1829) p. 199, Type Scomber rochei Risso = Scomber thazard Lacépède, designated by Gill, Proc. Acad. Nat. Sci. Philadelphia, (1862) p. 125,

Body fusiform, cylindrical, plump, robust, trunk long and tail short. Caudal peduncle very slender, depressed, long keel each side. Head rather large. Snout very short, conic, scarcely compressed. Mouth small, jaws equal. Tongue flat, smooth, silvery. Teeth very small, jaws equal. Gill rakers very long, slender, numerous. Branchiostegals 7. No air bladder. Pyloric coecd dendritic. Vertebrae 39. Body nearly scaleless posteriorly,

anteriorly enlarged as corselet. Vertical fins especially small. First dorsal short, well separated from second by long space. Second dorsal and anal small, each with 7 or 8 finlets. Hind part of second dorsal and anal not with last rays enlarged like finelet. Paired fins small.

Evidently a single small widely-distributed species, generally about 30 cm long, living in tropical and subtropical seas. They often approach the shores of temperate regions in warm weather. According to Kishinouye it feeds on small plankton and small fishes (Atherina, Stolephorus, Sprattelloides and immature Engraulis). It is inferior in taste, as it is coarse and very perishable.

Auxis thazard (Lacépède)

Scomber thazard Lacépède, Hist. Nat. Poiss., vol. 12, p. 599, 1800 (no locality); vol. 3, p. 9, 1802 (type locality, Between 6° and 7° S. lat. on coast of New Guinea).

Auxis thazard Jenkins, Bull. U. S. Fish Comm., vol. 22, p. 441, 1902 (1903) (Honolulu). — Jordan and Evermann, Bull. U. S. Fish Comm., vol. 23, pt. 1, p. 171, 1903 (1905) (Hilo; Honolulu). — Jyuba and Matsuura, Cat. Zool. Spec. Tokyo Imp. Univ., Vert., p. 166, 1920 (Bungo). — Fowler, Ann. Natal Mus., vol. 5, pt. 3, p. 255, May 1926 (Natal coast); Mem. Bishop Mus., vol. 10, p. 132, 1928 (Honolulu). — Mc Culloch, Mem. Austral. Mus., No. 5, pt. 2, p. 262, Sep. 10, 1929 (reference).

— Anonymous, Illustrat. Jap. Aquat. Animals, vol. 1, pl. 24, fig. 4, 1931. — Fowler, Ann. Natal Mus., vol. 7, pt. 3, p. 416, Oct. 1934 (Natal coast).

Depth 3 to 3 1/8; head 2 1/3 to 2 2/5, width 2 1/8 to 2 2/5. Snout 4 2/3 to 5 in head from snout tip; eye 3 1/2 to 4, greater than snout or interorbital; maxillary reaches 1/2 to 2/3 in eye, expansion 1 2/3 to 1 3/4 in eye, length 2 to 2 1/8 in head; teeth fine, villiform, in bands in jaws, on vomer and palatines; interorbital 3 7/8 to 4 1/2, nearly level; preopercle edge and ridge with small, uneven serrae. Gill rakers 4 + 11, lanceolate, longer than gill filaments or 2 1/5 in eye.

Scales 23 in lateral line to caudal base and 3 more on latter, 2 or 3 above, 5 below, 4 predorsal, 2 rows of cheek scales to preopercle ridge; muzzle, including interorbital, maxillary and suborbitals, naked. Lateral line of rather large tubes, well exposed, each with small, basal crimped scale. Scales with 8 to 15 basal

Scomber taso (Commerson) Cuvier, Hist. Nat. Poiss., vol. 3, (1802) p. 106, (type locality, New Guinea, 6° - ° S. Lat.).

Scomber rochei Risso, Ichth. Nice, ~~1810~~, p. 165, (1810) (type locality, Nice).

Auxis rochei Günther, Cat. Fish. Brit. Mus., vol. 2, (1860) p. 362 (Jamaica; Amboyna). — Gill, Proc. Acad. Nat. Sci. Philadelphia, ~~1862~~, p. 125, (1862 reference). — Günther, Proc. Zool. Soc. London, (1869) p. 238, (St. Helena). — Steindachner and Döderlein, Denkschr. Akad. Wiss. Wien, Math. naturw. Kl., vol. 49, pt. 1, ~~1885~~, p. 180, (1885 Yokio). — Kitahara, Journ. Fisher. Bur., Tokyo, vol. 6, (1897) p. 3, pl. 4, fig. 9, — Playfair, Fishes of Zanzibar, p. 67, 1866 (Zanzibar).

Auxis bisus Rafinesque, Carrat. micr. Animal. Sicil., p. 45, pl. 2, fig. 1, 1810 (type locality, Sicily).

Thynnus rocheianus Risso, Hist. Nat. Eur. Mérid., vol. 3, p. 417, 1826 (type locality, Nice).

Auxis vulgaris Cuvier, Hist. Nat. Poiss., vol. 8, p. 139, pl. 211, 1831 (type locality, Sicily; Nice; Morea).—

Auxis tapeinozoma Bleeker, Nat. Tijdr. Ned. Indië, vol. 6, (1854) p. 408, (type locality, Nagasaki); Everhard. Batavia Genoot. (Nal. Schth. Japan), vol. 26, (1857) pp. 5, 98, pl. 7, fig. 1, (Nagasaki); Act. Soc. Sci. Ind. Neerl., vol. 3, no. 3, (1857-58) p. 15, (Japan). — Günther, Cat. Fish. Brit. Mus., vol. 2, ~~1860~~ 1860, p. 369, (compiled). — Jordan and Snyder, Annot. Zool. Japon., vol. 3, (1901) p. 64, (Yokohama; Nagasaki). — Jordan and Hubbs, Mem. Carnegie Inst., vol. 10, no. 2, ~~June 27, 1925, p.~~

5378 and 5379. Otan market, Iloilo. March 30, 1908. Length 66 to 69 mm.

4453 [D. 5477]. Surigao, Strait, Samar. July 29, 1909. Length 38 mm.

13 examples [D. 5447]. West coast of Luzon. March 11, 1909. Length 37 to 89 mm. (Type, No. 68403 U. S. N. M.).

1 example. West coast Mindanao. February 6, 1908. Length 47 mm. [D. 5131].

ovatum, Xystaema, 244.

Xystoema, 244.

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ovena, Gerres, 237.

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Synagris, 87, 111.

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Upeneus, 305.

oyena, Diaptera, 237.

Gerres, 228, 236.

Labrus, 236.

220, 1 June 27, 1925 (Tokyo, Kyoto, Misaki, Toyama).

Auxis thynnoides Bleeker, Nat. Tijdw. Ned. Indie, vol. 8, (1855) p. (296) 301, (type locality, Ternate); Act. Soc. Sci. Ind. Neerl., vol. 1, no. 5, ~~1856~~ 1856, p. 6, 1 (Amboina); vol. 2, no. 7, ~~1857~~ 1857, p. 5, 1 (Amboina).

Auxis ramsayi Castelnau, Proc. Linn. Soc. New South Wales, vol. 3, (1879) p. 382, (type locality, Sydney fish market).

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Othonias, 368.

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biauritus, 364, 365.

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brunneus, 366.

dolorosus, 354, 355.

goldmani, 387.

lateoides, 354, 355.

leuciscus, 376.

macrophthalmus, 376.

, Awyis hira Kishinouye, Sui. Gak. Hol, vol. 1, (1915) p. 23, pl. 1, fig. 16, (type locality, Japan); Journ. College Agric. Tokyo, vol. 8, no. 3 (March, 1923) p. 462, figs. 55, 59, (Hokkaido, Japan Sea, Korea, Ogasawara Island; Ryukyu, Formosa). — Jordan and Hubbs, Mem. Carnegie Mus., vol. 10, no. 2, June 27, 1925 p. 221, (reference). — Tanaka, Journ. Fac. Sci. Univ. Tokyo, vol. 3, pt. 1, p. 22, November 4, 1931 (reference).

, Awyis maru Kishinouye, Sui Gak. Ho, vol. 1, (1915) p. 24, pl. 1, fig. 19, (type locality, Japan); Journ. College Agric. Tokyo, vol. 8, no. 3, (March, 1923) p. 463, figs. 2, 15, 27, 56, 69, (South Manchuria, Hokkaido, Japan Sea, Korea, Ogasawara Island, Ryukyu, Formosa).

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Ombrina russelii, 410.

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Sciaena, 402.

Opisthistius, 204, 211.

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osseus, Johnius, 372, 379.

Sciaena, 379.

Depth 4 1/4 to 4 3/5; head 3 1/2 to 4, width 1 7/8 to 2. Snout 3 4/5 to 4 3/4 in head from snout tip; eye 4 3/4 to 5 1/5, 1 to 1 2/5 in snout, 1 1/2 to 1 3/5 in interorbital, adipose lids marginal, though rather broad; maxillary reaches 1/5 to 1/3 in eye, length 2 4/5 to 3 1/2 in head from snout tip; interorbital 3 2/3 to 3 4/5, low, depressed moderately. Gill rakers 10 + 36, 1 3/4 in gill filaments, which 1 1/2 times eye.

Scales 62 to 65 in lateral line to end of corselet ~~sometimes~~; sometimes several rows of scales on both sides of lateral (hira).

D. IX or X — III, 8 or 9 + 8, first spine 2 1/8 to 2 1/4 in total head length, first branched ray 4 4/5 to 5 1/2; A. III, 9 + 7, first branched ray 5 to 5 1/8; caudal 1 3/5 to 2, widely lunate; least depth of caudal peduncle 14 or 15; pectoral 2 to 2 1/5, rays I, 24; ventral I, 5, length

$2\frac{2}{5}$ to $2\frac{7}{8}$ in total head length.

Back dark greenish, turning blue after death. Several oblique blue lines in scaleless area after corselet above lateral line. Belly iridescent silvery. Oval dark spot below each eye.

East Indies, Riu Kiu, Formosa, Japan, Korea, Western Australia, New South Wales, Tasmania, Hawaii. Also in the Atlantic and Mediterranean.

U. S. N. M., No. 52748. Hawaii. Bureau of Fisheries (04021). Length 277 mm.

U. S. N. M., No. 72629. Java. Bryant and Palmer. Length 261 mm.

A. N. S. P., No. 11335. Newport, Rhode Island. Samuel Powell.

A. N. S. P., No. 17079. Italy. Bonaparte Collection ($\frac{76}{1}$). Dr. J. B. Wilson.

is said to differ from Johnius
remiluctatrix in the marked notch
between the 2 dorsal fins and the
denticulated preopercle. Likely the young,
it is described in brief:

Depth somewhat over 4 in total; head 4.
Eye 4 1/2 in head; maxillary nearly reaches
opposite hind eye edge; upper jaw convex,
covers lower; upper jaw with 7 little
enlarged teeth each side; preopercle
distinctly denticulated, with 3 or 4 denticles
enlarged at angle.

Scales 68 in lateral line.

D. X, I, 27, fins nearly separated by
deep notch, first dorsal length 2 1/3 in
soft dorsal length; A. II, 7, second spine
strong, 3/4 length of first ray; caudal rounded;
ventral prolonged in filament.

Gray green, with numerous oblique lines,
black spot at base of each ray and each spine of
dorsal, dorsal and caudal mottled with olive.
Length 245 mm.